

Remarks

Claims 1-38 and 116-130 and 132 are pending and examined in the Office Action that was mailed June 21, 2005. Claims 1-38 and 116-130 and 132 are rejected. Claims 120-125 are indicated as being free from the prior art. Applicant would like to thank Examiner Naff for the telephone interview accorded to Charles Lyon and Stacy Blasberg on November 14, 2005. Applicant would also like to thank both Examiner Naff and Supervisor Wityshyn for the telephone interview accorded to Brenda Jarrell and Stacy Blasberg on December 1, 2005. Claims 38, 120, 121 and 124 have been cancelled. Claims 1, 33, 116, 123, and 132 have been amended. New claim 133 has been added. Applicant respectfully submits that no new matter has been added by these amendments. Each of the objections and rejections raised in the Office Action is addressed individually below.

Rejections Under 35 U.S.C. § 112

Claims 1-38, 126-130, and 132 have been rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement and as being indefinite.

Examiner states that adequate support is not found in the specification for shapes as required by claim 1 wherein the shape does not result from surface texture or pattern. Examiner further states that claim 1 and its dependent claims are unclear as to the structure of a stamp having each of the shapes claimed when the shape is not from a surface texture or pattern. Applicant respectfully submits that the specific shapes not resulting from a surface texture or pattern as cited in claim 1 are clearly supported and described by the original specification as filed. For example, the specification describes various embodiments of the claimed invention including a stamp having a convex shape, wherein the convex shape does not result from a surface texture or pattern. The specification discloses that the stamp may be shaped as a cylinder (Figure 1 and page 12, line 12), tube (page 12, line 14), balloon (page 12, line 15), sphere (page 12, line 16), ellipse (page 12, line 17), square (page 12, line 17), polygon (page 12, line 19), hexagon (page 12, line 19), or octagon (page 12, line 19). However, solely in order to further prosecution and without conceding the argument that the specification discloses various shapes of the stamp, Applicant has amended claim 1 to remove the specific shapes.

Examiner has rejected claim 1 and claim 132 as indefinite because the Examiner states that "balloon-like" is uncertain as to meaning and scope. Applicant respectfully submits that not only would one of ordinary skill in the art know what a balloon shape is but based upon

common knowledge and experience with balloons, but the specification further defines balloon-like as having one opening (page 12, line 15). The patentee, acting as his own lexicographer, may clearly set forth a special definition of a claim term in the patent specification or file history. See CCS Fitness, Inc. v. Brunswick Corp., 288 F.3d 1359, 1366 (Fed. Cir. 2002). Applicant should be able to use any word to define a structure as having one opening, especially the term "balloon-like" which, like a balloon, actually is a structure having one opening. However, solely in order to further prosecution without conceding the argument that the term "balloon-like" is certain in meaning and scope, Applicant has amended claim 1 to remove the term, and has amended claim 132 to remove the term "balloon-like".

Examiner also rejects claims 33-36, 126-130 and 132 as unclear as to whether the lumen is contained by a stamp having each of the shapes of claim 1, or only certain of the shapes. The Examiner further states that it is unclear how any shape other than a cylinder could have a lumen. As previously stated, Applicant has described and depicted the term "lumen" to encompass both circular and non-circular shapes. Furthermore, as the specification discloses, the walls of the stamp define the lumen (page 6, lines 4-5). Therefore, if the stamp has a cross-section of a square (or any other shape than a cylinder) for example, so too would the lumen (page 12, lines 15-17). Applicant therefore respectfully submits that the claims clearly state that a stamp of any shape can have a lumen.

Examiner rejects claims 33-36, 126-130 and 132 as unclear to where the portal of the lumen is located when the stamp has each of the shapes of claim 1 and as to structure that constitutes a portal of a lumen. Claim 33, of which claims 34-36 depend, states that the lumen comprises a portal which provides communication between the lumen and an exterior of the stamp. No more is required to describe the stamp. The claims encompass any stamp with a portal that provides communication between the exterior of the stamp. The precise location and structure of the portal is irrelevant.

Examiner further states that claims 116-125 are unclear as to how the lumen of the stamp and the of the substrate, when present, functions in relation to the substrate to provide patterning of a surface as required in the preamble of claim 116. Claims 116 and 123 have been amended to further clarify the claimed invention.

Examiner continues that it is further unclear in claims 116-125 as to the structure that constitutes a portal of a lumen. As stated above, no more is required to describe the stamp. The

claims encompass any stamp with a portal that provides communication between the exterior of the stamp. The precise structure of the portal is irrelevant.

Examiner rejects claim 38 as being unclear as to the substrate structure that is open, partially-closed or closed. Solely in order to further prosecution and without conceding the argument that "open, partially-closed or closed" is clear, Applicant has cancelled claim 38 without prejudice. Claim 38 covered all substrate structures (open, partially-closed and closed) and was therefore not limiting.

In light of the above, Applicant respectfully requests that the written description and indefiniteness rejections be reconsidered and withdrawn.

Rejections Under 35 U.S.C. § 103

Claims 1-7, 9-13, 24-26, 30-32, 37, 38, 126-130 and 132 were rejected under 35 U.S.C. § 103 as being unpatentable over Maracas et al. (U.S. Patent No. 5,669,303) in view of Whitesides et al. (U.S. Patent No. 6,180,239 B1). Examiner restates that the claims of the present application are drawn to a method of patterning a surface by providing a stamp having a stamping surface, disposing a substrate proximate to the stamping surface and modulating the dimensions of the stamp to place the stamping surface in contact with the substrate; that Maracas discloses stamping a surface with a flexible stamp by using pressure to cause the flexible stamp to change shape and contact a surface to be stamped; that Whitesides discloses patterning a surface by using a stamp having different shapes (Figures 3a-16d), and patterning can be by deforming a flexible planar stamp (col. 11, lines 11-13); and it would have been a matter of obvious choice depending on individual preference and convenience to provide the stamp of Maracas with a preferred shape as disclosed by Whitesides in the absence of unexpected functioning of the stamp. Applicant respectfully disagrees that the present invention is unpatentable over Maracas in view of Whitesides.

Independent claim 1 of the present invention recites a method of patterning a surface, comprising: providing a non-planar stamp having a stamping surface; disposing a substrate proximate to the stamping surface; and modulating the dimensions of the stamp to place the stamping surface in contact with the substrate, wherein before the step of modulating, the stamp has a convex shape, and wherein said convex shape does not result from a surface texture or pattern. The methods presently claimed refer to providing a *non-planar* stamp having a three-dimensional cross-section when no force or stress is applied. The dimensions of such a stamp

may then be modulated by "applying a mechanical stress or an electrical stimulus, removing a mechanical stress etc." (see page 4, lines 4-7). The dimensions of the stamp remain three-dimensional, whether or not stress or stimulus is applied.

In contrast, Maracas et al. discloses only *planar* stamps, which are flexed, to place them in contact with the substrate. The planar stamps of Maracas have a two-dimensional cross-section. As depicted in Figure 1 of the Maracas patent, a flexible two-dimensional *planar* stamp 106, having an outer surface 108 and a stamping surface 110, is placed in contact with an "article" 102 by aligning the stamp with the article and deforming the stamp (column 3, lines 25-30 and column 5, lines 54-59). The planar stamp is deformed using a pressure controlled chamber, which shrinks to place the stamp in contact with the article, commencing at the center of the flexible stamp and proceeding outwardly away from the center (column 5, line 64 to column 5, line 18). Although flexing the stamp puts it in contact with the substrate, the stamp is planar before any pressure is applied. Similarly, although the stamping *surface* contains raised and recessed portions, the stamp is planar. Maracas does not teach a method including a stamp exhibiting convexity before modulation (i.e., applying any stress or stimuli) to the stamp, and that does not result from a surface texture or pattern.

Viewing Maracas in combination with Whitesides does not make up for a lack of disclosure, teaching or suggestion of the present invention by Maracas. Examiner states that Whitesides discloses patterning a surface using a non-planar stamp that can be obtained by deforming a flexible planar stamp so as to be non-planar. Applicant respectfully submits that Whitesides, together with Maracas, does not disclose, teach or suggest the method claimed by the present invention. Specifically, Whitesides does not disclose the step of modulating the dimensions of the stamp to place the stamping surface in contact with the substrate to produce a pattern on the substrate. Instead, Whitesides discloses (a) a planar stamp that is wrapped around a cylinder, and then the cylinder and stamp are rolled over a surface; or (b) a surface wrapped around a cylinder, and then the cylinder and surface rolled over a stamp (see Figs. 5a, 5b, and 5c). Nothing in Whitesides discloses, teaches or suggests modulating the stamp to place the stamp in contact with the substrate.

In determining whether or not there is a proper case of obviousness, it is necessary to establish whether one of ordinary skill in the art would, having the references before him, be motivated to make the proposed combination, modification or substitution so as to yield all elements of a claimed invention. In re Lintner, 458 F.2d 1013, 1016 (CCPA, 1972).

In rejecting claims under 35 U.S.C. §103, it is incumbent upon the Examiner to establish a factual basis to support the legal conclusion of obviousness. See In re Fine, 837 F.2d 1071, 1073, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). In so doing, the Examiner is expected to make the factual determinations set forth in Graham v. John Deere Co., 383 U.S. 1, 17, 148 USPQ 459, 467 (1966), and to provide a reason why one having ordinary skill in the pertinent art would have been led to modify the prior art or to combine prior art references to arrive at the claimed invention. Such reason must stem from some teaching, suggestion or implication in the prior art as a whole or knowledge generally available to one having ordinary skill in the art. Uniroyal, Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed. Cir. 1988); Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281, 293, 227 USPQ 657, 664 (Fed. Cir. 1985); ACS Hosp. Sys., Inc. v. Montefiore Hosp., 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). Further, prior art references should not be combined where such combinations would render inoperable the intended purposes disclosed therein. In re Gordon, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984). These showings by the Examiner are an essential part of complying with the burden presenting a prima facie case of obviousness. Note In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). If that burden is met, the burden then shifts to the Appellant to overcome the prima facie case with argument and/or evidence. Obviousness is then determined on the basis of the evidence as a whole. See *id.*; In re Hedges, 783 F.2d 1038, 1039, 228 USPQ 685, 686 (Fed. Cir. 1986); In re Piasecki, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984); and In re Rinehart, 531 F.2d 1048, 1052, 189 USPQ 143, 147 (CCPA 1976).

Applicant respectfully submits that Examiner has not fulfilled his burden in providing a factual basis to support the legal conclusion of obviousness. Examiner has not pointed to one teaching or suggestion in the prior art to combine Maracas and Whitesides. Even assuming there was a teaching or suggestion to combine the references (which there is not), the combination does not make up each individual reference's failure to disclose, teach or suggest the method of the present invention.

For example, it is clear that placing the stamp disclosed in Whitesides (wherein the planar stamp is wrapped around a cylinder to be rolled over a substrate) in the pressure chamber of Maracas does not result in the claimed present invention. In fact, Maracas makes clear that the stamp must first have the ability to be flexed into contact with the substrate. Examiner has not explained how a pressure chamber would accomplish flexing a stamp wrapped around a cylinder

into contact with the substrate. Furthermore, Maracas discloses that it is imperative to the proper alignment between the stamp and the substrate that the stamp contact the substrate in the center at first, and then contact should be made proceeding outwardly away from the center. Again, it seems impossible to contact the stamp of Whitesides with a substrate in this manner as disclosed in Maracas.

Furthermore, it is clear that there is no teaching or suggestion to apply the modulating feature of Maracas to the stamp in Whitesides. Specifically, there is no teaching whatsoever that the cylinder (of which the planar stamp is wrapped around) in Whitesides is either flexible, or can exhibit flexibility or modulation. Even if the cylinder in Whitesides could be flexible, there is no disclosure, teaching or suggestion on how any modulating would be accomplished. If the "modulating" feature of applying pressure downward in Maracas is applied to the stamp in Whitesides, the result would be the stamping of only the bottom portion of the stamp wrapped around the cylinder onto the substrate directly below it. The entire point to the stamp wrapped around the cylinder in Whitesides is to roll the stamp over a substrate with the same and constant pressure applied. Applicant submits that the Examiner has not explained any reference, disclosure, teaching, suggestion, or way that the two references, when combined, render the presently claimed invention obvious.

During the two telephone interviews, Examiner has further argued that the stamp in Maracas could potentially "sag" before being flexed, and therefore it is "obvious" that the stamp in Maracas *could* have a convex shape. Applicant respectfully disagrees. Maracas teaches, suggests and discloses *only* a planar stamp that remains planar until the point of flexing, wherein pressure is applied to flex the stamp in order to place the stamping surface in connection with the surface (column 5, line 64 - column 6, line 18, and column 7, lines 4-47). For example, Maracas discloses providing a first printing pressure, P_1 , and second printing pressure, P_2 , which establish a pressure differential across the stamp (column 7, lines 9-16 and Fig. 13). As shown in Fig. 13, P_1 and P_2 are equal, creating a planar stamp without any "sag" or deformation. The pressure differential across P_1 and P_2 is then manipulated to provide controlled contact between the stamping surface and the surface (column 7, lines 11-16). The resulting configuration during this step is depicted in Fig. 14 (column 7, lines 27-28). Therefore, Maracas only discloses a planar stamp that is flexed or manipulated by external stimuli, to place the stamping surface into contact with the surface.

During the most recent telephone interview, Examiner even further argued that the stamp of Maracas is convex immediately before coming into contact with the surface. Applicant respectfully submits, however, that even assuming arguendo that the stamping surface is convex immediately before coming into contact with the surface, this convexity does not result *before the step of modulating*, as required by the claims of the present invention. Any convexity of the Maracas stamp results from modulating or flexing the stamp (e.g., manipulating the pressure differential), and therefore the convexity does not exist *before the step of modulating*.

Furthermore, during our most recent phone interview, Examiner stated that Fig. 3a, 3b, and 3c and column 9, lines 32-53 of Whitesides discloses a flexible stamp that may be deformed or "modulated" prior to stamping. Applicant respectfully submitted then, and resubmits now, that the disclosure and figures cited do not disclose flexing or modulating a stamp to place the stamp in contact with the surface, as disclosed and claimed by the present invention. Rather the cited disclosure and figures show a stamp which is deformed to coat the stamping surface with a species, which is then later transferred from the stamping surface to the substrate surface. Applicant further submits that nothing in Whitesides discloses, teaches or suggests any method of applying any force or pressure to modulate or change the dimensions of the stamping surface to place the stamping surface in contact with the substrate.

Appellant respectfully submits that the rejections made in this Office Action represent a troubling example of hindsight reconstruction. This case has been with the Examiner for over four years. Perhaps in that time the inventive features have become familiar to the Examiner. They remain new to the art, however, as demonstrated by the Examiner's inability to find a single reference that *teaches or suggests* the claimed invention.

Claims 8 and 27-29 have been rejected under 35 U.S.C. § 103(a) as being obvious over Maracas et al. in view of Whitesides et al. (U.S. Patent No. 6,180,239 B1) and further in view of Kumar et al. (U.S. Patent No. 5,512,131). As stated above, independent claim 1, from which claims 8 and 27-29 depend, is non-obvious over the cited references. Applicant respectfully submits that Maracas, Whitesides and Kumar cannot be combined to make up each individual reference's failure to disclose, teach or suggest the method of the present invention.

Claims 14-23, 33-36 and 116-119 have been rejected under 35 U.S.C. § 103(a) as being obvious over Maracas et al. in view of Whitesides et al. (U.S. Patent No. 6,180,239 B1), Singhvi (U.S. Patent No. 5,776,748), Kumar et al. (U.S. Patent No. 5,512,131), and further in view of Anderson (U.S. Patent No. 6,645,432). As stated above, independent claim 1, from which claims